

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Roger Buelow, et al

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For: Light Appliance and Cooling
Arrangement

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Examiner: Jacob Y. Choi

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PRELIMINARY AMENDMENT

Applicant is concurrently filing a request for continued examination to respond to the Office Action dated 13 January 2006. A request for a one-month extension of time accompanies the request for continued examination.

Prior to examining this application following a request for continued examination filed concurrently herewith, please amend the application as shown starting on the following page.

Please enter the following full set of claims:

1. (Presently amended) A light appliance and a cooling arrangement, comprising:
 - a) a light appliance;
 - b) a liquid-tight enclosure for the light appliance that gives off unwanted heat into surrounding air within the enclosure during operation, the enclosure having an external wall at least part of which is thermally conductive;
 - c) a medium that is in contact with said external wall of the enclosure; the medium (i) having adequate thermal conductivity; and (ii) being sufficiently cooler than the external wall of the enclosure that an air circulating device for circulating air, heated by the light appliance or by the air circulating device, to the thermally conductive portion of the external wall removes sufficient heat from the air by dissipating the heat into the cooler medium through said thermally conductive portion so as to substantially increase lifetime of the light appliance; and
 - d) the enclosure being free of a one-way air valve that opens a passage into the interior of the enclosure from the exterior of the enclosure when the pressure on a portion of the valve at the exterior of the enclosure exceeds the pressure on a portion of the valve at an interior of the enclosure.
2. (Original) The combination of Claim 1, wherein the light appliance comprises a filamented lamp.
3. (Original) The combination of Claim 2, wherein the filamented lamp comprises molybdenum leads.
4. (Original) The combination of Claim 2 wherein the lamp is a halogen lamp.
5. (Original) The combination of Claim 1, wherein the light appliance comprises a high intensity discharge lamp.
6. (Original) The combination of Claim 5, wherein the high intensity discharge lamp comprises molybdenum leads.
7. (Original) The combination of Claim 5, wherein the lamp is a high pressure sodium lamp, a high pressure mercury vapor lamp, or an ultrahigh pressure mercury lamp.
8. (Original) The combination of Claim 1, wherein the light appliance further comprises a heat sink for removing heat from the light appliance.

9. (Original) The combination of 1, wherein the light appliance comprises an LED.
10. (Original) The combination of Claim 9, wherein the light appliance further comprises a heat sink for removing heat from the LED.
11. (Original) The combination of Claim 1, wherein the medium comprises water.
12. (Original) The combination of Claim 1, wherein the medium comprises a solid.
13. (Original) The combination of Claim 12, wherein the solid includes a cooling device for cooling the solid to a sufficiently low temperature to allow substantial dissipation of heat from within the enclosure into the solid through said thermally conductive portion.
14. (Original) The combination of Claim 1 wherein the medium comprises air.
15. (Original) The combination of Claim 14, wherein the air comprises circulating air.
16. (Original) The combination of Claim 1, wherein the air circulating device comprises an electrical fan.
17. (Original) The combination of Claim 1, wherein the air circulating device comprises a heat pump or an air pump.
18. (Original) The combination of Claim 1, wherein the thermally conductive wall comprises stainless steel.
19. (Original) The combination of Claim 18, wherein the thermally conductive wall further comprises glass.
20. (Original) The combination of Claim 1, wherein the thermally conductive wall comprises a thermally conductive plastic.
21. (Currently amended) A light appliance with a cooling arrangement, comprising:
 - a) a light appliance;
 - b) a liquid-tight enclosure for the light appliance that gives off unwanted heat into surrounding air within the enclosure during operation, the enclosure having an external wall at least part of which is thermally conductive; and
 - c) a medium comprising water that is in contact with said external wall of enclosure; the medium (i) having adequate thermal conductivity; and (ii) being sufficiently cooler than the external wall of the enclosure that an air circulating device for circulating air, heated by the light appliance or by the air circulating device, to the thermally conductive portion

of the external wall removes sufficient heat from the air by dissipating the heat into the cooler medium through said thermally conductive portion so as to substantially increase lifetime of the light appliance; and

- d) the enclosure being free of a one-way air valve that opens a passage into the interior of the enclosure from the exterior of the enclosure when the pressure on a portion of the valve at the exterior of the enclosure exceeds the pressure on a portion of the valve at an interior of the enclosure.

22. (Original) The combination of Claim 21, wherein the light appliance comprises a filamented lamp or a high intensity gas discharge lamp.

23. (Original) The combination of Claim 21, wherein the light appliance further comprises a heat sink for removing heat from the lamp.

24. (Original) The combination of Claim 21, wherein the thermally conductive wall comprises stainless steel.

~~25. (Original) The combination of Claim 24, wherein the thermally conductive wall further comprises glass.~~

26. (Currently amended) The combination of Claim 21, ~~wherein the thermally conductive wall comprises a thermally conducting plastic~~ the enclosure is free of heat fins projecting inwardly from the inner surface of said external wall.

27. (Currently Amended) A light appliance with a cooling arrangement, comprising:

- a) a light appliance;
- b) a liquid-tight enclosure for the light appliance that gives off unwanted heat into surrounding air within the enclosure during operation, the enclosure having an external wall at least part of which is thermally conductive;
- c) a medium comprising water that is in contact with said external wall of the enclosure; the medium (i) having adequate thermal conductivity; and (ii) being sufficiently cooler than the external wall of the enclosure that an air circulating device for circulating air, heated by the light appliance or by the air circulating device, to the thermally conductive portion of the external wall removes sufficient heat from the air by dissipating the heat into the cooler medium through said thermally conductive portion so as to substantially increase lifetime of the light appliance; and
- d) ~~an electrical driver comprising an electrical or electromagnetic device for converting~~

~~voltage and/or limiting current to the light appliance;~~

- e) the enclosure being free of a channel formed between an interior surface of the external wall of the enclosure and a sleeve surrounding the light appliance.

28. (Original) The combination of Claim 27, wherein the light appliance comprises a filamented lamp or a high intensity gas discharge lamp.

29. (Original) The combination of Claim 27, wherein the light appliance further comprises a heat sink for removing heat from the lamp.

30. (Currently amended) The combination of Claim 27, wherein the enclosure thermally conductive wall comprises stainless steel is free of heat fins projecting inwardly from the inner surface of said external wall.

31. (Currently amended) The combination of Claim 30, wherein ~~the thermally conductive wall further comprises glass~~ the enclosure is free of a one-way air valve that opens a passage into the interior of the enclosure from the exterior of the enclosure when the pressure on a portion of the valve at the exterior of the enclosure exceeds the pressure on a portion of the valve at an interior of the enclosure.

32. (Currently amended) The combination of Claim 21, ~~wherein the thermally conductive wall comprises a thermally conducting plastic~~ further comprising an electrical driver comprising an electrical or electromagnetic device for converting voltage and/or limiting current to the light appliance.

33. (Currently amended) The combination of Claim 1, wherein the enclosure medium:

- a) ~~has adequate thermal conductivity; and~~
- b) ~~is sufficiently cooler than the external wall of the enclosure~~

~~as to eliminate the need for~~ is free of heat fins projecting inwardly from the inner surface of said external wall.

34. (Currently amended) The combination of Claim 1, wherein the enclosure medium:

- i) ~~has adequate thermal conductivity; and~~
- ii) ~~is sufficiently cooler than the external wall of the enclosure~~

~~as to eliminate the need for directing said air, heated by the light appliance or by the air circulating device, into~~ is free of a channel formed between an interior surface of the external wall of the enclosure and a sleeve surrounding the light appliance.

REMARKS

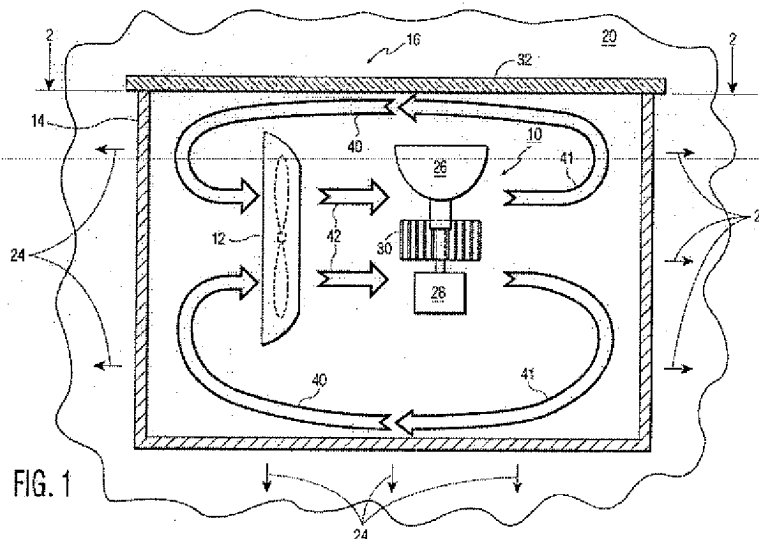
Various claims have been amended herein, and their patentability is shown below.

Status of Claims

Claims 1-34 are pending in the present application.

Summary of Claimed Subject Matter

Applicants' Claims 1 and 27 may be read on the following, exemplary embodiment of the invention as follows:



Claim 1 in italics as read on foregoing figure:

1. *A light appliance and a cooling arrangement, comprising:*
 - a) *a light appliance [10];*
 - b) *a liquid-tight enclosure [16] for the light appliance that gives off unwanted heat into surrounding air within the enclosure during operation, the enclosure having an external wall [14] at least part of which is thermally conductive;*
 - b) *a medium [20] that is in contact with said external wall of the enclosure; the medium (i) having adequate thermal conductivity; and (ii) being sufficiently cooler than the external wall of the enclosure that an air circulating device [12] for circulating air, heated by the light appliance or by the air circulating device, to the thermally conductive portion of the*

external wall removes sufficient heat from the air by dissipating the heat into the cooler medium through said thermally conductive portion so as to substantially increase lifetime of the light appliance; and

- c) *the enclosure being free of a one-way air valve that opens a passage into the interior of the enclosure from the exterior of the enclosure when the pressure on a portion of the valve at the exterior of the enclosure exceeds the pressure on a portion of the valve at an interior of the enclosure [the illustrated enclosure is free of a one-way air valve].*

Claim 27 in italics as read on the foregoing figure:

35. *A light appliance with a cooling arrangement, comprising:*

- a) *a light appliance [10];*
- b) *a liquid-tight enclosure [16] for the light appliance that gives off unwanted heat into surrounding air within the enclosure during operation, the enclosure having an external wall [14] at least part of which is thermally conductive;*
- c) *a medium [20] comprising water that is in contact with said external wall of the enclosure; the medium (i) having adequate thermal conductivity; and (ii) being sufficiently cooler than the external wall of the enclosure that an air circulating device [12] for circulating air, heated by the light appliance or by the air circulating device, to the thermally conductive portion of the external wall removes sufficient heat from the air by dissipating the heat into the cooler medium through said thermally conductive portion so as to substantially increase lifetime of the light appliance; and*
- d) *the enclosure being free of a channel formed between an interior surface of the external wall of the enclosure and a sleeve surrounding the light appliance [the illustrated enclosure is free of such a channel formed by a sleeve]..*

Claim 20 in italics as read on the foregoing figure:

20. *The combination of Claim 1, wherein the enclosure is free of heat fins projecting inwardly from the inner surface of said external wall [the illustrated enclosure is free of such heat fins].*

Grounds of rejection

The pending claims (i.e., Claims 1-34) stand rejected under 35 USC 103 (a) as unpatentable over USP 4,419,716 to Koo (hereinafter "Koo") in view of USP 5,432,688 to Tobias et al. (hereinafter "Tobias"). This rejection is respectfully traversed.

Argument

1. Claims defining lack of a one-way pressure valve are not suggested by Koo and Tobias.

Claims 1, 21 and 31 have been amended to define the feature of the enclosure being free of a one-way air valve that opens a passage into the interior of the enclosure from the exterior of the enclosure when the pressure on a portion of the valve at the exterior of the enclosure exceeds the pressure on a portion of the valve at an interior of the enclosure. The combination of this feature with the other features of the foregoing claims are not taught or suggested by any routine (i.e., obvious) combination of Koo and Tobias.

In their Request for Reconsideration after Final Office Action dated April 13, 2006, Applicants have already described the extensive modifications to Koo's assembly that would be required to arrive at the broader subject matter of the previous claims, than of the currently amended Claims 1, 21 and 31. Koo's apparatus would need to be explicitly modified to remove his air valve 62 (Fig. 3), which would thwart his central concern of leak detection stated, for instance, at Col. 1, Lines 48-54. A person of ordinary skill in the art would thus be dissuaded from this unmistakable, further modification of Koo's assembly and from of thwarting such a central concern of Koo's assembly. See generally MPEP § 2143.01 - VI (Rev. 3, Aug. 2005) regarding extensive modifications changing basic principle of operation, and MPEP § 2143.01 - V (Rev. 3, Aug. 2005) regarding rendering a device inoperable for its intended purpose. So, the subject claims and their dependent claims should be allowed.

2. Claims defining lack of a channel formed between an interior surface of the external wall of the enclosure and a sleeve surrounding the light appliance are not suggested by Koo and Tobias.

Claims 27 and 34 have been amended to define the feature of the enclosure being free of a channel formed between an interior surface of the external wall of the enclosure and a sleeve surrounding the light appliance. The combination of this feature with the other features of

the foregoing claims are not taught or suggested by any routine (i.e., obvious) combination of Koo and Tobias.

In their Request for Reconsideration after Final Office Action dated April 13, 2006, Applicants have already described the extensive modifications to Koo's assembly that would be required to arrive at the broader subject matter of the previous claims, than of the currently amended Claims 27 and 34. Koo's apparatus would need to be explicitly modified to remove his sleeve liner 42, which he uses for forcing heated air to "[pass] through the clearance space 46 between the sleeve liner 42 and the front door panel 16." Col. 4, Lines 2-5. It would not be routine (i.e., obvious) to a person *of ordinary skill in the art* to further modify Koo's assembly by removing the sleeve liner 42. Additionally, such person would lack a reasonable expectation that the assembly would properly work in its intended environment of "an atmosphere containing gasoline fumes or other explosive vapors." Col. 1, Lines 13-16. Indeed, since Koo specifically taught the use of his sleeve liner 42 to work in the foregoing environment, a reasonable inference is that his assembly would not properly work in the mentioned environment. Thus, a person *of ordinary skill in the art* would be dissuaded from so modifying Koo's assembly. See generally MPEP § 2143.01 - VI (Rev. 3, Aug. 2005) regarding extensive modifications changing basic principle of operation, and MPEP § 2143.01 - V (Rev. 3, Aug. 2005) regarding rendering a device inoperable for its intended purpose. So, the subject claims and their dependent claims should be allowed.

3. Claims defining lack of heat fins projecting inwardly from the inner surface of the external wall of his enclosure are not suggested by Koo and Tobias.

Claims 26, 30 and 33 have been amended to define the feature of the enclosure being free of heat fins projecting inwardly from the inner surface of said external wall. The combination of this feature with the other features of the foregoing claims are not taught or suggested by any routine (i.e., obvious) combination of Koo and Tobias.

In their Request for Reconsideration after Final Office Action dated April 13, 2006, Applicants have already described the extensive modifications to Koo's assembly that would be required to arrive at the broader subject matter of the previous claims, than of the currently amended Claims 26, 30 and 33. Koo's apparatus would need to be explicitly modified to remove heat fins 38 project inwardly from the inner surface of his assembly's external wall. It would not be routine (i.e., obvious) to a person *of ordinary skill in the art* to further modify Koo's

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assembly by removing the heat fins 48. Additionally, such person would lack a reasonable expectation that the assembly would properly work in its intended environment of "an atmosphere containing gasoline fumes or other explosive vapors" mentioned at Col. 1, Lines 13-16. Indeed, since Koo specifically taught the use of his heat fins to work in the foregoing environment, a reasonable inference is that his assembly would not properly work in the mentioned environment. Thus, a person of *ordinary skill in the art* would be dissuaded from so modifying Koo's assembly. See *generally* MPEP § 2143.01 - VI (Rev. 3, Aug. 2005) regarding extensive modifications changing basic principle of operation, and MPEP § 2143.01 - V (Rev. 3, Aug. 2005) regarding rendering a device inoperable for its intended purpose. So, the subject claims and their dependent claims should be allowed.

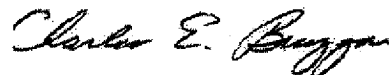
Conclusion

The examiner's rejection of Claims 1-34 under 35 USC 103 (a) as unpatentable over Koo in view of Tobias et al. should be withdrawn.

I certify that the foregoing document and any document(s) referenced below are being filed electronically with the USPTO using the private PAIR system on the date stated below.

Dated: May 12, 2006

Respectfully submitted,



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